

## PATENT CLAIMS

1. Device for the melting or the refining of glasses or glass ceramics;

1.1 with a plurality of pipes (3.1-3.7), which are U-shaped and lie next to one another, so that they form a cage-type skull channel (3) open toward the top;

1.2 pipes (3.1-3.7) can be connected to a cooling medium;

1.3. a high-frequency oscillation circuit is provided, comprising an induction coil (1);

1.4 the induction coil (1) wraps around channel (3) such that winding segments extend along the side walls of channel (3).

2. Device according to claim 1, further characterized in that the ends of the U-shaped piece are joined together in a conducting manner for purposes of forming a short-circuit bridge [shunt].

3. Device according to claim 1 or 2, further characterized in that channel (3) is thermally insulated in the upper space of the furnace.

4. Device according to one of claims 1-3, further characterized in that an additional heating [unit] (5.1-5.4) is provided in the upper furnace space.

5. Device according to claim 4, further characterized in that the additional heating

unit (5.1, 5.4) is configured and arranged in such a way that it acts directly on the surface of melt (8).

6. Device according to claim 4, further characterized in that a ceramic plate (7), which is heated by the additional heating device (5.3) and gives off heat to the surface of melt (8) is provided between the additional heating device (5.3) and the surface of melt (8).

7. Device according to one of claims 1-6, further characterized in that several flat coils (1, 10, 100) connected one behind the other are assigned to channel (3).

8. Device according to claim 7, further characterized in that an additional heating device (5.1, 5.2) is provided between the transition regions of the individual coils each time.

9. Process for the melting and refining of glasses or glass ceramics, particularly glass with the use of a device according to one of claims 1 to 8, further characterized in that the gas/air or gas/oxygen ratio of the burners is adjusted to produce a reducing atmosphere, so that the redox ratio of polyvalent ions lies on the reduced side.

10. Method according to claim 8 or 9, further characterized in that, in particular, the  $\text{Fe}^{3+}/\text{Fe}^{2+}$  ratio is extensively shifted to the reduced form ( $\text{Fe}^{2+}$ ).

11. Method according to claim 9 or 10, further characterized in that the glass used involves phosphate or fluorophosphate glass.

12. Method according to one of claims 9 to 11, further characterized in that, in particular, the  $\text{SO}_4^{2-}/\text{S}^{2-}$  ratio, the  $\text{SeO}_3^{2-}/\text{Se}^{2-}$  ratio and/or the  $\text{TeO}_3^{2-}/\text{Te}^{2-}$  ratio is [are] shifted to the reduced form ( $\text{S}^{2-}$ ,  $\text{Se}^{2-}$ ,  $\text{Te}^{2-}$ ).

13. Method according to one of claims 9 to 12, further characterized in that the glass involves an alkali (alkaline-earth) zinc (boro)silicate glass.

14. Method according to one of claims 9 to 13, further characterized in that the reducing conditions are not adjusted by means of a burner, but rather by reducing gases or gas mixtures such as forming gas,  $\text{H}_2$ ,  $\text{CO}$ ,  $\text{CO}_2$  and other gases.